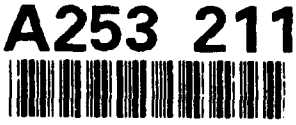

Operational Sustainment in an Immature Theater: Considerations for Planning and Sustaining a Campaign in a Mid- to High-Intensity Conflict

A Monograph
by

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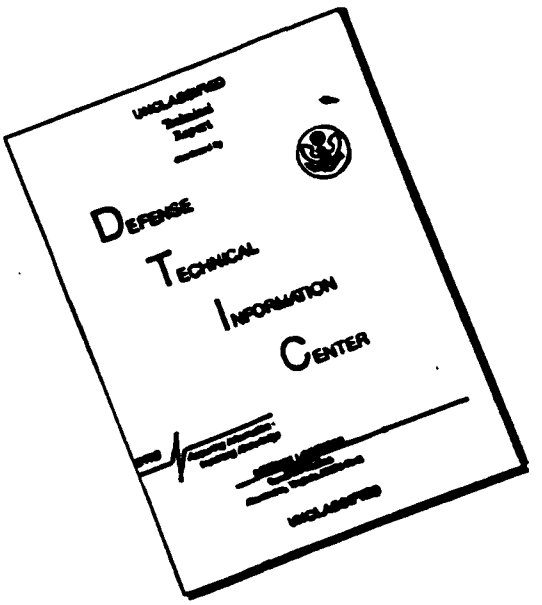

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The impetus for this monograph was the realization that the U.S. may have to introduce and sustain forces in a mid- to high-intensity conflict within an immature theater of war. This monograph discusses the operational sustainment considerations inherent with such a major operation or campaign.

The monograph first establishes a framework for addressing operational sustainment. From this established point of departure, the influence of theory on the evolution of operational sustainment is examined. Next, to validate the theories put forth three World War II campaigns were examined to investigate how the theories of operational sustainment were applied and their impact on the outcome of the campaign.

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the role of sustainment operations in the outcome of the campaign, a scenerio involving the U.S. in a mid- to high-intensity conflict was developed based on the assessment of the current. Considerations for sustaining an operational force were then addressed using the framework developed.

The monograph concludes that the theories set forth by the theorists are still valid. The historical cases cited revealed all elements of the sustainment framework must be considered, but the performance of those operations inherent with the arming, fueling, and transporting functions were essential for success.

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ABSTRACT

OPERATIONAL SUSTAINMENT IN AN IMMATURE THEATER: CONSIDERATIONS FOR PLANNING AND SUSTAINING A CAMPAIGN IN A MID- TO HIGH-INTENSITY CONFLICT. by MAJ Ted O. Kostich, USA 48 pages.

Our last experience with the sustainment of operational forces in a conflict within an area of operations was nearly two decades ago. Our most recent experiences in contingency operations have failed to stress our operational sustainment activities. The impetus for this monograph is the realization that the United States may have to introduce and sustain forces in a mid- to high-intensity conflict within an immature theater. This monograph examines the considerations an operational commander must contemplate to successfully sustain his force.

The study begins by establishing a framework for addressing operational sustainment and the context in which it will apply. From this established point of departure, the influence of theory on the evolution of operational sustainment is examined. Classical and contemporary theorists each offered considerations to sustainment practices. To validate the theories put forth, three World War II campaigns were examined to investigate how the theories of operational sustainment were applied and their impact on the outcome of the campaign.

Recognizing the powerful insights history offers as to the role of sustainment operations in the outcome of the campaign, a scenerio involving the U.S. in a mid- to high-intensity conflict was developed based on the assessment of the current threat. Considerations for sustaining an operational force were then addressed using the framework developed.

The monograph concludes that the theories set forth by the classical and contemporary theorists are still valid. The historical cases cited revealed all elements of the sustainment framework must be considered, but the performance of those operations inherent with the arming, fueling, and transporting functions were essential for success. Today's operational commander must maintain his focus on those areas.

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I. INTRODUCTION

> You will not find it difficult to prove that battles, campaigns, and even wars have been won or lost primarily because of logistics (19:23).

Our last experience with the sustainment of operational forces in conflict within an area of operations was nearly two decades ago. Since that time, several areas of the world have experienced the full spectrum of conflict.

One important lesson that we have drawn from our previous experiences and observation of these current conflicts is: "Support for nations and movements friendly to our interests is a uniquely effective way to protect those interests" (55:4). By the application of economic and security assistance, training, and equipment, we are able to increase our collective security without the commitment of military forces.

On occasion these means of support are insufficient to ensure our interests and those of our allies are upheld. That brings us to another lesson guiding our security policy: "Free nations must be willing to act to protect their interests . . . to take up arms if necessary . . . " (55-4). It is within this context where we must be willing to commit military forces to contingency operations.

America's values and interests are becoming increasingly dependent on conditions which occur beyond its borders. Because of our growing interdependence with other

nations of the world, our security posture must take a global stand to meet our requirements for national defense.

The greatest challenges to our interests are occurring in the two regions of the world identified as the Western Hemisphere, and the Middle East/Southwest Asia. John Keegan, in his book Zones of Conflict: An Atlas of Future Wars, identifies portions of the latter region as a " . . . permanent flashpoint" (10:44).

The problem of responding with military force in those areas is twofold. First we lack forward deployed forces to respond to aggression and uphold our national interests in many areas within those regions. Any military involvement would require a contingency force to deploy and operate in a combat zone without a significant preestablished support base. Second, our AirLand Battle Future Concept is headed towards a globally deployable contingency posture versus forward deployed forces, thus further reducing US military presence abroad (59:Slide 1).

Our most recent contingency operations, the rescue operation in Grenada, the attack on terrorist bases in Libya, and the Panamanian invasion, were all of limited duration and objective. For the most part, the enemy lacked the forces, sophisticated weaponry, and sustainment base necessary for prolonged conflict. Because our initial application of overwhelming firepower and resources

successfully resolved the conflict rapidly, the requirement to sustain our force in an immature theater was minimal.

Our most recent experiences in contingency operations have failed to stress our operational sustainment activities. In the future, this may not always be the case. The purpose of this monograph is to determine the sustainment considerations for conducting campaigns and major operations in a mid- to high-intensity conflict within an immature theater of war.

My analysis will begin in Section III by considering the influence of the classical theorists Sun Tzu, Carl von Clausewitz, and Baron De Jomini, and the contemporary theorist Martin Van Creveld on the conduct of sustainment operations. The theories of these men will be followed by Section IV which contains the analysis of three campaigns where armies operated in an immature theater of war. From this historical analysis, I will develop considerations that are applicable to a similar campaign or major operation we may have to conduct today.

The methodology used will compare three historical examples with contemporary issues. The campaigns of Rommel in North Africa, Slim in Burma, and the Allied invasion of France (Operation OVERLORD) are presented and analyzed in terms of key sustainment functions which have application to operations we may have to undertake in an immature theater.

Before continuing, it is necessary to establish and define the sustainment functions I will use as a framework for addressing the sustainment of these campaigns and the context in which they will apply. One must further understand the role operational sustainment has in the outcome of a campaign. Section II serves these purposes.

II. FRAMEWORK FOR ADDRESSING OPERATIONAL SUSTAINMENT

The adequacy of an operational force's logistics is measured in terms of its ability to perform its sustainment functions and distribute supplies inherent with those functions. At both the tactical and operational level of war, sustainment of the force is achieved through the conduct of six sustainment functions: manning, arming, fueling, fixing, transporting, and protecting. A brief description of those functions to be used in the framework for addressing operational sustainment follows.

> Manning is the " . . . uninterrupted flow of fighting men to the battle area . . . and necessary personnel services . . . " (38:60).
>
> Arming is the distribution and " . . . replenishment of arms, ammunition, and equipment . . . " (47:C23).
>
> Fueling is the distribution and " . . . the uninterrupted flow of fuel . . . to joint/combined operational forces . . . " (47:C23).
>
> Fixing is " . . . the repair and replacement of material . . . and evacuation of equipment . . . " (47:C24).
>
> Transporting is " . . . timely flow of stocks (all classes of supply in large quantities) and

services (maintenance and manpower) . . . " (47:C25).

> Protecting is the defense of the overall sustainment system. Normally it is achieved through the application of passive measures such as dispersion, concealment, and cover (38:62).

The framework for evaluation is meaningless unless one understands the relationship between sustainment and the culminating point. The culminating point is " . . . where the strength of the attacker no longer significantly exceeds that of the defender, and beyond which continued offensive operations therefore risk overextension, counterattack, and defeat" (38:181). Culmination occurs because " . . . the attacker must consume resources and commit forces as he moves into enemy territory . . . " (38:109). The ability of the force to perform its sustainment functions is what most often determines when culmination will occur.

The operational sustainment framework generally applies to " . . . Army forces as small as a corps . . . or as large as army groups and theater armies . . . " (47:2-5). It encompasses:

> . . . those logistical and support activities required to sustain campaigns and major operations within a theater of operations . . . extends from the theater sustaining base or bases which link strategic to theater support functions, to the forward CSS units and facilities organic to major tactical formations (38:65).

Given the framework by which to address operational sustainment and the relationship between sustainment and culmination, it only remains to define an immature theatre of operations. After investigating the characteristics of

an established theater outlined in FM 100-16, Support Operations: Echelons Above Corps, I have chosen to define an immature theater as:

> A theater of operations that lacks most or all of the following features: forward deployed forces, secure arrival bases, bulk supplies in place, ancillary facilities, and a developed civilian infrastructure.

FM 100-16 goes on to imply these conditions exist in areas where U.S. Army forces are not forward-deployed. The support for these forces " . . . involves a contingency operation . . . " and " . . . a joint US contingency force . . . " (40:1-10)

The establishment of a framework and the context in which it applies serves as a basis for investigating the influence of theorists on the art of sustaining armies. I now turn to the influence of theory on operational sustainment.

III. THEORETICAL CONCEPTS OF OPERATIONAL SUSTAINMENT

Classical and contemporary theorists alike have focused little of their attention on the art of sustaining armies. They have instead, been more content to focus their efforts on the politics, strategy, nature, and tactics of war. When sustainment, or as they termed it, logistics, was discussed, classical theorists addressed it according to two main criteria, the type of supply system used or the technical means of transportation available. The sustainment functions we recognize today were either not

discussed in those terms or applicable to the nature of warfare at that time (14:231-232).

The most noted contemporary theorist on the subject, Martin Van Creveld, feels there is little accuracy in either of these classical distinctions. His own investigation concluded that " . . . strategy became an appendix of logistics" (14:233).

It is within this context of contradiction that one must evaluate the impact of theory on operational sustainment. I will begin by investigating the works of the classical theorists Sun Tzu, Carl von Clausewitz, and Baron de Jomini.

SUN TZU

The sustainment requirements of ancient Chinese armies were significantly different than those we experience today. Under the feudal structure, the sovereign's call to war saw members of the nobility being responsible for providing certain numbers of soldiers, armament, and supplies. Though logistics, as we currently understand it were a concern, any form of established sustainment system was lacking. Most notably absent was any reference to the requirements for fixing, fueling, or protecting (12:32).

Eventually the feudal structure began to disintegrate. Armies became better organized, trained, and led. It was

during this period that the concept of a "general's staff" first emerged. With this emergence came a formal system for sustainment, the responsibility of which was vested in a commissary officer. These were the sustainment conditions existing when Sun Tzu developed his theory (12:35).

Sun Tzu recognized that sustainment involved more than the appointment of a commissary officer to the "general's staff". He realized the need for a doctrine to guide the regulation of supply routes and the provisioning of the principal items used by the army. His belief in the role this simple sustainment doctrine would play in the outcome of a campaign led him to conclude that generals who failed to master it would fail. One might also add that there were four other fundamental factors which generals were supposed to master: moral influence, weather, terrain, and command (12:63-65).

In waging war, Sun Tzu's sustainment considerations were based on limited campaigns. He recognized that " . . . there has never been a protracted war from which a country has benefited" (12:73). Because of this belief, his sustainment effort focused on the army carrying its own equipment from the homeland, but relying on the enemy for its provisions (live off the enemy). His decision also considered the poor transportation system and the strain hauling great tonnages of provisions would place upon the limited capacity. Sun Tzu realized that as long as his

army kept moving it could feed and fuel (fodder) itself off captured enemy stocks (12:73-74).

The existing level of technology and duration of campaigns kept sustainment requirements simple. Because of this, Sun Tzu's focus on operational sustainment was limited to the functions we identify as arming, manning, fueling, and transporting.

CARL VON CLAUSEWITZ

As technology advanced, sustainment became more important. Clausewitz, in his discussion of maintenance and supply of armies, attributed this increased importance of sustainment to the armies of modern times being much larger than those of the Middle Ages, and the requirement for them to be in a constant state of readiness (1:330).

This constant state of readiness could only be achieved by having the army remain permanently in the field. Because a greatly enlarged army could not live off the land while stationed on its own territory, the government had to assume the responsibility for its sustainment. This responsibility for support was met through the use of depots (1:331).

Clausewitz recognized while depots certainly improved the ability to perform the selected sustainment functions of provisioning (manning) and arming, this concept was not

without its limitations. Dependence on depots for supplies hindered the operational movement of armies. The existing transportation network and assets were inadequate to support large armies at any great distance from their source of supply.

Because of the limitations of the depot system, the sustainment of campaigns varied little from that of Sun Tzu's time period. Foraging remained the simplest way to meet the needs of the army. But, Clausewitz also realized that foraging had its limitations. It became essential to carry the campaign to enemy soil and impossible for the army to stay in any area for extended periods (1:332).

Unlike Sun Tzu, Clausewitz recognized that a balance existed between the depot system and the foraging technique. He saw the needs of an army as falling into two categories: " . . . those that any agricultural area can provide, and those that can only by obtained from sources located to the rear" (1:341). He further subdivided the army's requirements into supplies furnished by local households, those requisitioned by troops, general requisitions, and those transported from depots. Normally, the methods were employed simultaneously with one technique predominating. The balance struck between these methods of sustainment was based on the size of the force to be sustained (1:232/343).

Clausewitz ultimately concluded that the relationship between war and supply was:

> . . . the supply system will govern war insofar as the other governing factors will permit; but where these start to offer too much resistance, the conduct of war will react on the supply system and so dominate it (1:337).

BARON DE JOMINI

The third classical theorist was Jomini. Like his predecessor and contemporary, he only briefly addressed sustainment in his writings. His detailed discussion of lines of operation certainly has applicability to the sustainment functions of today, but he addressed these terms in the context of concentrating forces and maneuver versus operational sustainment.

Jomini, like Clausewitz, acknowledged that an invasion without a base of supply near the front of operations was difficult to undertake. He realized that sustainment involved more than dependency on established depots. It was also a function of the country, season, strength of the army, and spirit of the people. From these considerations he arrived at ten general maxims which governed the supply techniques for forces on the march. The focus of these was on how to obtain supplies off the land, when and where to establish depots, and the importance of water lines of communications for the transport of supplies (9:130-133).

Jomini also was the first to express the notion of host nation support. Unlike Sun Tzu and Clausewitz who focused

exclusively on foraging and living off of enemy stocks for provisions, he realized the benefit of host nation cooperation. Though Jomini spoke more in terms of invading a country versus coming to the aid of a friendly nation, he recognized the contribution the country could make to the success of the operation. He encouraged the use of local authorities in the regulation of assessments and legality of their issue. If the authorities fled, he advocated the creation of provisional authorities from leading men who remained (9:130).

Jomini concluded that logistics was " . . . the practical art of moving armies" (9:230). He went on to prescribe eighteen principles to achieve this purpose. Most of the principles focused on the functions we associate with manning, fixing, transporting, and protecting (9:230-235).

MARTIN_VAN_CREVELD

Van Creveld combined Jomini's definition and principles of logistics to form his own definition: " . . . the practical art of moving armies and keeping them supplied . . . " (14:1). With this as his point of departure, he developed his sustainment theory by investigating logistics of European wars from the Thirty Years War through World War II. From his studies he concluded that " . . . logistics make up as much as nine tenths of the business of war . . . " (14:231).

The focus of Van Creveld's theory revolves around the interrelationship of the sustainment functions of arming, manning, fueling, and transporting. As late as the War of 1870, the arming function, in terms of ammunition only, consumed less than one percent of the supplies required. The majority of the remaining supplies required to man and fuel (fodder) the force could be obtained from the land.

As the weapons of warfare became more sophisticated, Van Creveld concluded that armies could be sustained relatively easily while standing still, but that it would be almost impossible while moving forward at any great speed. Technology had greatly increased the demand for the prerequisites of war and only continuous replenishment from a fixed base could satisfy those requirements.

Van Creveld recognized that forward movement was a function of the distance a force could be effectively supported from its base. He termed this distance the "critical distance" and expressed it in terms of a given type of vehicle's ability to effectively support from the sustainment base (14:234). This distance also considered the impact of friction on the forward movement of supplies. He described friction as " . . . an endless series of difficulties, things that go wrong . . . " (14:231).

Van Creveld concluded that any developments in new forms of transportation are offset by the enormous increase

in friction and supplies required by modern operations. Because of these circumstances, " . . . only a small fraction of its maximum theoretical capacity will ever be utilized . . . and that its effect on the speed of mobile operations will therefore be marginal" (14:235).

The test of a theory's validity is the measurement of its effectiveness in application. I now turn to historical analysis to investigate how these theories of operational sustainment were applied and their impact on the outcome of major operations or campaigns.

IV. HISTORICAL ANALYSIS OF OPERATIONAL SUSTAINMENT

> Preparedness has never been reckoned the strong suit of U.S. military capacity. More or less invariably, the outbreak of war has meant frantic improvisation, not least in raising, arming, training, and deploying ground forces adequate to the conflict (6:339).

The United States Army is not alone in this dilemma. History is full of examples where the ability to perform the operational sustainment functions was directly responsible for the success or failure of a major operation or campaign conducted in an immature theater of operations. By analyzing the sustainment effort of some of these campaigns in terms of our sustainment functions, one can draw lessons that have applicability to similar operations we may have to undertake today. The German experience in North Africa is one such campaign.

Rommel in North Africa

In analyzing Field-Marshal Erwin Rommel's North African campaign, many attribute his failure to the lack of operational sustainment rather than " . . . any weaknesses of his tactical or strategic thought" (4:373). One must bear in mind, however, that often times the conduct, scope, and design of his campaigns were inconsistent with the overall strategic direction of Germany. It is within this context that one must evaluate the operational sustainment of Rommel's Afrika Corps.

In early 1941, Hitler decided to send an expeditionary force under the direction of Field-Marshall Erwin Rommel to North Africa to bolster the Italian forces who had just been defeated in Cyrenaica. With less than six weeks preparation, Rommel's initial force of one armored and one motorized division was dispatched to the theater of operations (14:202).

Rommel's operational mission was to secure an area that would allow him maneuver and afford the port of Tripoli some protection against air attack. Tripoli was his only support base within the theater of operations. The theater lacked bulk supplies in place, facilities, and a developed infrastructure.

Under ideal conditions, the port of Tripoli could handle five cargo ships or four troop transports

simultaneously. The total port capacity was 45,000 tons per month (14:184). Air resupply was capable of transporting an additional twenty-five tons per day (3:211). Though the actual requirements of Rommel's force vary, approximately 30,000 tons of supplies were needed for the sustainment and current maintenance of his force while the remainder was required to support further advance (51:10).

To accomplish his mission, Rommel chose to establish a front some 300 miles to the east of Tripoli in Sirte. This selection of positions for the defensive front was considered to be twice the distance where motor transport could effectively sustain his army (14:184). The matter was further complicated by the fact there was no railway running eastward to support his forces and there was only one road capable of sustaining any significant level of motor transport, the Via Balbia. To compensate for this poorly developed transportation network, supplies were moved along the coastline in small ships to the ports of Buerat and Ras el Ali (51:5).

To further ease the shortfall caused by the limited capacity at Tripoli and allow for a faster buildup of the sustainment base, the Germans negotiated with the Vichy French for the use of the port of Bizerte. Though the French agreed to sell lorries, provide ships, and grant access to Bizerta, no German supplies ever passed through the port until the fall of 1941 (14:185-186).

Meanwhile, Rommel's forces in Sirte had begun their spring offensive to drive the British out of Libya and invest the port of Tobruk. Though one of the principle reasons for capturing Tobruk was to improve the sustainment capability of his force, this added another 700 miles to Rommel's line of communications without achieving a decisive victory. His ground lines of communication now exceeded 1,000 miles.

Prior to the offensive, the combination of sea and air delivery of supplies surpassed consumption rates. From the moment he began this offensive, Rommel's ability to transport supplies from his operational sustainment base at Tobruk to his forward facilities declined. The supplies continued to reach the port in sufficient quantities, but were piling up on the docks for lack of motorized and coastal transport to the front.

Ultimately the operation reached its operational culminating point before attaining its objective. The Afrika Corps' strength diminished because there was no suitable logistics headquarters to control the forward flow of supplies, motor transport was at a severe shortage, and the port capacity of Benghazi never reached its full capacity because of the lack of air defense (51:9-10). Rommel's offensive had been stymied and his army was now to remain on the defensive until November 1941. Van Creveld's theory on the tremendous impact of friction on operational sustainment had been validated.

Rommel took a page from the works of the classical theorists after scattering the British forces sent to relieve Tobruk. He saw an opportunity to conduct a counteroffensive by living off of captured enemy stocks. Though he was initially successful in correcting his transport situation by capturing large numbers of British trucks, he now faced a new challenge in the inability to maintain the captured equipment, obtain fuel and ammunition, and replace the huge losses in personnel and equipment. Rommel had been stopped again by lack of sustainment.

By January 1942, he had withdrawn back to El Agheila, some 400 miles east of Tripoli. After shortening his lines of communications by falling back to El Agheila, Rommel was again able to develop his sustainment base. The reasons were three-fold; Axis convoys were bringing more supplies across the Mediterranean Sea, the truck transport was able to reduce the bottleneck at the port of Tripoli and get the supplies to forward bases, and the supply system was better organized (51:17).

Rommel once again returned to the offensive. Captured supplies and equipment played a key role in supplementing his organic sustainment effort, but again the lack of fuel limited his advance just short of Tobruk.

Taking an operational pause to build his forward sustainment bases, Rommel continued with his offensive. He

finally captured the port of Tobruk in June 1942, and with it, vast quantities of fuel, ammunition, provisions, and vehicles (51:19). The supplies captured at Tobruk allowed him to continue his eastward movement to the port of Mersa Matruh.

In July 1942, Rommel began his assault on the El Alamein line. After only three short days he was forced to call off the attack because of his critical supply situation. The cause of this dilemma was the recently captured ports of Tobruk and Mersa Matruh were still not being used, his ground lines of communications were 750 to 1,400 miles in length, and the Royal Air Force had done a superb job of interdicting both the land and sea LOCs (51:21-22).

Rommel's decision to attack at Alam el Halfa marked the beginning of the end for his Afrika Corps. His gamble for a quick victory, even though he recognized he had surpassed his operational culminating point, entailed the highest of risks. His lack of success forced him back on the defensive. Operational sustainment could no longer make good the losses. There appears to have been ample supplies available in Italy, but there was no way of getting them to North Africa or forward to Rommel's Afrika Corps. Sufficient transportation assets were simply not available (51:22-25).

Operations in North Africa are often described as the period in time where the " . . . war took on its most modern shape" (4:353). In this type of warfare, mobile forces can cease to be effective by the lack of tanks, whereas serious casualties in manpower are not so noticeable (4:360). One can argue that Rommel's real war in North Africa was not one of maneuver, but a one of materiel. He simply could not replace his combat systems in sufficient quantities whereas he seldom wanted for manpower. In this new age of weapon technology, arming his force took precedence over manning.

In retrospect, sustainment priority was only partially to blame for Rommel's failure in North Africa. For the little over two years Rommel's troops were in North Africa, " . . . every single ton that was consumed . . . had to be laboriously crated in Italy, then shipped across the Mediterranean" (14:182). Given all classes of supply were handled in this manner, one might then question how it was arrive within the area of operations even if he had been given top priority.

Also playing a key role in Rommel's ability to operationally sustain his force was the Luftwaffe. When the Luftwaffe was able to maintain air superiority over Malta and the land and sea LOCs as they did in March through May 1942, supplies flowed readily and the initiative of the offense was restored. As air superiority

was lost because of attrition and lack of fuel, so was the ability to sustain the ground and air forces within the theater of operations. The limited LOCs now became subjected to continuous interruption and the air force could not compensate for the increased demand for supplies. At its maximum capacity, the Luftwaffe could only transport 1,000 troops and twenty-five tons of materiel per day (3:205-211). That was far short of Rommel's requirements for sustainment, let alone further advance.

Rommel would continually ignore the balance between operational prospects and logistical possibilities. He did however, in hindsight, reflect that: "a general should take personal care of his supplies in order to force the supply staffs to develop their initiative" (14:183). The next historical example is one of an operational commander who took Rommel's reflection to heart.

Field-Marshal Viscount Slim in the Burma Campaign

In 1943, Slim took command of Fourteenth Army. One of his first observations upon assuming command was:

> I knew that the campaign in Burma would above all be a supply and transport problem . . . on taking over I found myself confronted by three major anxieties--supply, health, and morale (11:169).

What Rommel had admitted in hindsight, Slim had recognized in forethought.

If one were looking for a region of the world that embodies the essential characteristics of an immature theater, Burma would certainly qualify. Burma was a sparsely populated region distinguished by large areas of unmapped terrain and a terrible climate. The existing road and rail network left Burma virtually isolated from its neighbors. It was in this theater of operations that the Allies decided to open their two front war against Japan.

The operational sustainment base for the Southeast Asia theater was located in India. Between the sustainment base and the forward theater of operations lay a range of mountains which caused a couple hundred mile separation in roads, railways, and navigable rivers. Slim's problem was that he could get logistical and support activities to his theater sustaining base, but he was lacking in the ability to transport them forward to the major tactical formations (11:170).

Through the summer of 1943, the rail network had reached a capacity of 2,000 tons per day. This failed to meet the demands of Slim's half a million man army and threatened the possibility of any offensive that summer.

In January 1944, Slim was given three specific operational objectives. All required the further distancing from his sustainment base. The strategic priority, however, remained the " . . . security, maintenance, and expansion of the air and land route to China" (50:6).

With the strategic priority in mind, Slim defined his first operational aim as the destruction of the Japanese Fifteenth Army. The intent of the Imphal-Kohima operation was to entice the Japanese out of their prepared defenses on the Chidwin River into attacking the prepared positions of Slim's Fourteenth Army. Once the enemy had reached culmination, Slim would assume the offense to complete the destruction. This would be the focus of the Irrawaddy operation.

Though Slim had four principles on which he based this plan and all other operations, he always discussed the plan with his Major-General Administration. It was this individual who was responsible for the supply, transport, medical, and reinforcement organizations (11:209).

The sustainment of Slim's army was critical to his concept of operations for the Imphal-Kohima campaign. Inadequate railways, shortage of motor transport, few roads, and wet climate all made the movement of men and supplies a constant anxiety. Those soldiers near the sustainment bases in Dehli, Calcutta, and Karachi, and the railheads leading from them to the forward bases, were fairly well sustained with those items associated with the manning function. Those elements inherent with the arming function were also plentiful in India. Unfortunately, that was almost 1,000 miles from where it was needed. Those at the front continually wanted for virtually every class of supply.

The plan of sustainment for those in the forward areas depended upon the construction of an all-weather road from the railhead at Dimapur to Imphal. Much of the labor to build the roads came from the Indian Tea Association. Here was the critical host nation support that Jomini had addressed in his theory (11:171-172).

Cargo planes were used to augment the ground sustainment effort by bringing additional food, ammunition, general supplies, and reinforcements into Imphal. On their return trip to bases in western India, the planes would evacuate the sick and wounded.

The extensive time and resources required to develop his LOCs and transportation assets to a point where they could sustain the force and build a sizable base forced Slim to carefully choose the location of the battlefield. It was also this ability to sustain himself that allowed him to engage in an attritional fight with the Japanese (53:4-17-1, 4-18-2).

In both of his major operations, Imphal-Kohima and Irrawaddy, Slim's forces were able to achieve their decisive objectives. In the Imphal-Kohima operation, this occurred by hastening the culmination of the Japanese attack. The Irrawaddy operation featured attainment of the objective before the culmination point was reached. It was Slim's ability to secure his LOCs, sustain himself, and choose the field of battle that consistently proved decisive.

Destruction of the enemy was always Slim's first priority. He recognized that operational sustainment would influence his ability to accomplish the primary task. In addition to recognizing those maxims and principles offered by the theorists, Slim also developed his own for conducting successful operational sustainment of forces in an immature theater.

The first was construction type units are critical to the development of the infrastructure. Until the LOCs and the sustainment base can be sufficiently developed, a vast majority of the forces in theater will be noncombat type units.

Next, the shortage of supplies requires better management, greater accountability, and more creativity in the adminstration of logistical operations. The lesson painfully learned from the Japanese was training, discipline, and morale can compensate for lack of resources.

Finally, air transport is key to the success of operations in immature theaters. The effectiveness of aerial sustainment is a measure of the air supremacy enjoyed. Neither regular air supply or movement can be carried out unless at least a minimum of local air dominance is achieved (11:539-546).

Even though Slim suffered anxiety over sustainment issues, he never let them obscure his focus. The last

historical example provides insights into what occurs when sustainment becomes the primary focus of the operation.

OPERATION OVERLORD: THE NORMANDY INVASION

COL Harold L. Mack, the logistics planner for OVERLORD lines of communications plans stated:

> There can be little question that a shortage of gasoline and ammunition, and other supplies, was primarily responsible for our failure to inflict a decisive defeat on the Germans before the close of 1944 (19:26).

The planners of OVERLORD realized that the success of the operation depended upon their ability to sustain the forces at a greater rate than the enemy. To accomplish this objective required the rapid maturation of the theater of operations. The design of the plan was, therefore, primarily driven by logistical issues.

The primary objective of the OVERLORD plan read:

> To secure a clear lodgement on the continent from which further offensive operations can be developed (19:26).

Unfortunately, the focus was so fixed on the logistical objectives of developing the theater that the real purpose of the invasion was lost, the destruction of the German Army.

Operation NEPTUNE was the amphibious phase of Operation OVERLORD. The objective was to secure the lodgement area, defined for logistical purposes as the whole area between

the Seine and the Loire Rivers (15:70). The operational mission of the forces involved in NEPTUNE was to drive the enemy from the lodgement, not destroy them. Unfortunately the preoccupation of the planners with the beachheads made them lose sight of what lay beyond in the lodgement area.

Planning for the operation commenced approximately 18 months before the invasion. After selecting landing sites, a comprehensive plan for logistical support for the first 90 days was worked out. It was anticipated that this would be sufficient time to secure the lodgement area.

The assault force consisted of 1,222 ships, 2,400 troop planes, and 860 gliders hauling 176,475 men, 20,111 vehicles, and their associated basic load (7:524). Operational shipping comprised another 224 motor transport ships, 48 stores ships, and 209 preloaded ammunition and commodity loader ships. The commodity loader ships were like floating warehouses and served a function similar to that of our current prepositioned ships (2:329-356).

Much of the detailed assault planning was for naught because the armies were operationally positioned in the wrong place. Strategic logistics had caused the British Army to be operationally deployed in the north and the American Army in the south. Because U.S. forces arriving in England approached from the west, they were assigned ports of arrival and sustainment bases in western England.

To deconflict the armies, British units were established in eastern England. When it came time to deploy the forces, fear of the confusion that would be caused by crossing the LOCs of the armies resulted in the British assaulting on the left and the U.S. on the right. Regrettably, this placed the weaker force in the primary breakout area near Caen (53:4-19/20/21-2).

The operation was further hampered by the impact of friction and the validity of the original planning assumptions on the conduct of the operation. Bad weather, poor navigation, failure to capture ports, fierce enemy resistance, and failure to clear beaches all combined to disrupt the original rigid plans. The end result was only half of the scheduled supplies were unloaded during the first week.

Flexibility eventually prevailed as the initial off-loading priority was abandoned. Everything was unloaded regardless of priority. The Navy even agreed to beach its ships during low tide which also facilitated timely off-loading.

Because the breakout from the beaches took longer than expected, the quantities of all classes of supply, except ammunition, were initially sufficient. When the breakout finally occurred, consumption planning factors, supply discipline, transportation estimates, and maintenance were so deplorable that any attempt to inflict a decisive defeat on the Germans was lost.

The Allies had 150% of the transport capacity needed to sustain the force, but lack of road and vehicle maintenance soon depleted this overabundance. Rail transportation was also available, but the distance to the front was too short to make it effective. Ironically, sufficient quantities of all supplies were now available on the beaches, but the means to distribute them was lacking. It appears Van Creveld's argument that the speed and range of newer means of transport are more than offset by the enormous increase in friction and the quantities of supplies required was validated (14:206-221).

On the average, it took sixty-eight pounds per soldier per day to man, fuel, arm, fix, and transport this army in the field. The daily sustainment breakout averaged approximately seven pounds for rations, thirty-three pounds for fuel, eight pounds for ammunition, six pounds for replacement equipment, and thirteen pounds for construction and barrier materials (2:825).

Many of the sustainment lessons learned in North Africa and Burma were validated at Normandy. Air dominance or supremacy remained key to sustainment operations. Innovation and discipline continue to compensate for the impact of friction. One lesson relearned was the primary focus of the operational plan needs to be the destruction of the enemy force, not the sustainment of friendly forces. Clausewitz's conclusion on the relationship between supply and the conduct of war was validated.

History provides powerful insights into the role sustainment operations have in the outcome of major operations or campaigns. What remains is the sustainment considerations today's operational commander must contemplate to conduct mid- to high-intensity warfare in an immature theater.

V. OPERATIONAL SUSTAINMENT CONSIDERATIONS FOR AN IMMATURE THEATER OF WAR

Within the past forty years, every war which the U.S. was involved in either directly with combat forces or indirectly with military assistance occurred in countries referred to as the Third World (52:13). In LTG Gordon R. Sullivan's briefing to the Army War College in November 1989, he assessed the probability of a mid-intensity conflict over the next twenty years as being high in countries of two regions known as Central/Latin America and the Middle East/SWA (58:Slide 31). The latter region is " . . . bounded in the west by NATO's Southern Region and in the east by Southeast Asia" (56:120). The United States Central Command's (USCENTCOM) area of responsibility (AOR) includes nineteen nations within the region.

In regards to the USCENTCOM AOR, Secretary of Defense, Frank C. Carlucci, in his fiscal year 1990 report to Congress stated:

> Adequate levels of U.S. general purpose forces are available in the event of a regional crisis. Clearly, however, a timely and effective U.S. response to military threats will hinge on . . . relationships with friendly states for rapid force deployment and resupply, access to local facilities and support, and assistance from local military forces (55:57).

Nations within the USCENTCOM region have promised access to seven airfields and three ports to support military operations should the need arise. Those nations are Oman, Bahrain, Somalia, and Kenya. In addition to basing rights, these governments, as well as Egypt, Jordan, and the United Arab Emirates, provide services and facilities. They include the ability to purchase fuel, obtain water, access hospitals, and use local laborers and interpreters (26:19-24).

Should we find it necessary to protect our national interests in this region with military force, many of our potential adversaries could field a sizeable military force that is equipped with a wide range of modern sophisticated weaponry. Many nations within the region, to include Iran, Iraq, South Yemen, and Ethiopia, deploy armor/mechanized forces.

Any U.S. contingency operation, therefore, has the potential to escalate into a mid- to high-intensity conflict. The limited war we may have envisioned in our contingency planning expands into a general war for the Third World nation or nations involved, thus leading to an escalation in the intensity and duration of conflict.

USCINCCENT must take this into consideration when planning a military response.

Our basic military response to a crisis, where U.S. forces are nonforward-deployed, is with a joint contingency corps. Two of the requirements placed upon that force are respond rapidly and quickly terminate the conflict. To accomplish this, our doctrine calls for this force to be more mobile than the enemy. Given the high degree of maneuverability and striking power of potential enemies in the region, our contingency corps would require a large number of armored, mechanized, and aviation type units (38:172).

Major General (Ret) David Watts, the former J4 of USCENTCOM, described the basic logistical tasks in support of these forces in an immature theater of war as mobilization and deployment, establishment of the theater infrastructure, receipt and distribution of forces and materiel, and the sustainment of combat operations (63). Our current doctrine for contingency operations includes these tasks in a general five phase structure. The phases are predeployment/crisis action, deployment/initial combat actions, force buildup/combat operations, decisive combat operations, and redeployment (39:8-2).

The historical examples have shown that the operational commander may have anywhere from weeks to months to conduct

predeployment. The Pentagon's fiscal 1988 goal was to have the capability to deploy forces to the USCENTCOM region in six weeks (26:20).

During predeployment, USCINCCENT's sustainment focus will be on the application of resources to achieve the conditions he has identified for success. In doing so, he must consider which ones are key to rapid response and termination of the conflict.

For planning purposes, the USCINCCENT has a joint force list that approaches 400,000 personnel (23:40). Given a priority basis, the ground forces could include five Army divisions and two separate brigades, and one Marine Expeditionary Force (56:122). That implies he may be responsible for the operational sustainment of nearly the same number of combat forces Slim had available in Burma.

Having selected the conditions for success, USCINCCENT must consider the composition and sequencing of the force. The decision must take into account the need for rapid termination of the conflict, the availability of secure arrival bases, the amount of transportation available, and the potential threat (39:8-2).

The desire for rapid termination places increased demands on the transporting function of sustainment. The simultaneous conduct of the remaining sustainment functions may not be possible due to the lack of transportation. The commander must consider which ones are essential to his

concept of operations, and then allocate remaining resources accordingly. Historically, arming and fueling have taken precedence.

Although nations in the USCENTCOM region have promised access to lodgment areas, none allow permanent basing (26:21). Should the governments renege on existing commitments to provide secure arrival bases, a forced entry would be required. Beachheads and airheads would have to be secured to provide maneuver space for projected operations and a base of supply for the introduction and sustainment of additional forces. Conventional forces available for forced entry missions include Marine expeditionary, airborne, and to a lesser degree, air assault units (39:8-2). USCINCCENT's employment considerations must take into acount the availability of transport.

Our capability to conduct amphibious assaults and secure beachheads resides in the Marine Expeditionary Unit (MEU). The decision to commit the MEU with its fifteen days accompanying supplies reduces the immediate requirement for sustainment and uncommitted transport while capturing the ports necessary for follow-on force commitment. This allows USCINCCENT greater flexibility in the conduct of the other sustainment functions and the commitment of the remaining transportation assets.

Historically, the possession of airfields has been instrumental in achieving success in an immature theater

(20:57-63). Depending on the distance from the theater sustaining base, both airborne and air assault forces are available for securing airheads. USCINCCENT must consider which airfields are critical to the success of his contingency operation, both from an aerial sustainment and superiority standpoint. The consideration must take into account that large scale airborne/air assault operations are predicated upon air superiority and subject to the availability of strategic and theater airlift. A simultaneous deployment of our entire airborne division requires nearly three times the amount of strategic or five times the amount of theater airlift available in the inventory (54:B-4).

After selecting the forces to meet his requirements for success, the commander must consider the transportation requirements for their deployment. The movement plan that supports USCINCCENT'S concept of operations must take into consideration the size and type of force, response time available, length of the LOCs, the accompanying supplies required, and maturity of the area of operations.

Assuming the current response time remains six weeks, USCINCCENT will have approximately the same amount of time available for force initiation and predeployment as Rommel. The most significant difference, however, is Germany had already been at war for two years. No mobilization was required to predeploy his initial force.

The length of the LOCs must also be considered when assessing the ability to sustain the operation. Most of the forces projected to be available for employment are stationed in the U.S., some 8,000 air miles or 12,000 sea miles away. Depending on the mode of travel, transit time from CONUS could be anywhere from 16 hours to 32 days (26:20). Recognizing the significant transportation time involved and the limited transport available for the movement of continuous supplies, the operational commander must consider the length of time his initial force must be self-sustaining. The introduction of Rommel's Afrika Corps into North Africa is an example of a force being introduced without sufficient accompanying supplies for self-sustainment, and the consequences that befell it.

The USCINCCENT must also consider the maturity of the area of operations when conducting his predeployment sustainment activities. The more immature the area, the greater the requirement for noncombat units and sustaining supplies. Unfortunately, CENTCOM's area of operations has matured little since Rommel was there (37:173-175).

Having addressed those sustainment tasks necessary for predeployment, the focus shifts to the next phase of contingency operations, deployment. This is the key execution phase of the contingency operation. In this phase of the operation, the commander has little ability to influence the sustainment functions. He must constantly

assess the status of his accompanying supplies, how he can increase their protection, and how transport is influencing his operation. Regrettably, his ability to reconsider the sustainment decisions reached in the predeployment phase and then implement changes is minimal.

The competition for transportation will continue into the force buildup phase. Having established the initial lodgment, the emphasis of the operation shifts. During this phase, the goal is to increase combat power without losing the operational initiative (39:8-4). If Slim's conclusion is correct, then the vast number of forces introduced into the theater will be the noncombat units required to develop the sustainment bases and LOCs. The commander must weigh the ratio of forces and supplies necessary to continue the operation against those required to establish his sustainment base. He must be careful to ensure that the sustainment policy doesn't overrule his requirements for success.

During this phase, the average daily consumption rate of forces in the theater of operations is projected to be approximately 124 pounds per person per day. Over two-thirds of that amount is for fuel and ammunition (41:2-5). The number of noncombat units and supplies to be transported to support this effort will depend largely on the existing infrastructure and amount of host nation support provided. The commander must give serious thought

to what assets are locally available to his force and how to foster their development. Often, the host nation can greatly reduce the noncombat forces and supplies that must accompany a force.

Based on the force structure of our potential enemies, the requirement also exists during Phase III to usher heavy forces into the area of operations to gain the mobility initiative. The vast majority of these forces, their equipment, and supplies will compete for the same transportation assets necessary to develop the sustainment base. The rate of introduction will be based on the commander's judgement regarding the balance between combat forces, noncombat forces, and supplies necessary to build the sustainment base.

In Phase IV, USCINCCENT will conduct the decisive combat operations necessary to achieve the operational objectives. Like Rommel and Slim, he will have to judge when and if sufficient stocks have been established in theater to permit decisive combat operations. If so, then he will have to consider what the "critical distance" for his transportation assets will be. This, in turn, will allow him to plan for operational pauses in the attainment of his objectives. As was the case in each historical example cited, the failure to take into account the limitations of existing transport resulted in culmination before the operational objective was achieved.

Lastly during Phase V, redeployment, the intent is to redeploy the force as rapidly as possible so that it can be reconstituted for future contingency operations. My personal view is that often times this places greater demands on movement assets than the deployment phase. Though this issue was not addressed in theory or the historical examples, our experiences from World War I onward indicate a substantial amount of materiel waste occurs in this phase. A key consideration during redeployment should be how to prevent this.

Concerning oneself solely with the sustainment of forces in an immature theater will not in itself ensure victory. But as history has shown, operational commanders who neglect their supplies fail to succeed.

VI. IMPLICATIONS/CONCLUSIONS

Sustainment of the force has taken on increased importance in the conduct of modern warfare. On numerous occasions, the failure of the commander to involve himself in sustainment issues has led to the early culmination or ultimate defeat of his force. The purpose of this monograph has been to identify some of the sustainment considerations the operational commander must contemplate in the conduct of mid- to high-intensity conflict within an immature theater of war.

The strategy and tactics of war have usually taken precedence over sustainment issues, however classical theorists recognized the importance of sustainment in conducting war. When discussing sustainment, they focused on the type of supply system used and the means of transportation available. Though this may appear to be a simplistic approach, it has not caused us to dismiss their theories.

From Sun Tzu came the recognition that protracted campaigns do not benefit a country. Clausewitz offered the relationship between supply and the conduct of war. And from Jomini we gained several maxims and principles. From the historical examples, one could conclude that the most important was the recognition of the value of host nation support.

As technology evolved, the contemporary theorist Van Creveld recognized the increased demands for continuous replenishment. His theoretical contribution to operations in immature theaters was the recognition of the "critical distance". The distance was determined by the ability of the existing mode of transportation to support the force from its sustainment base.

Historically, those operational commanders that adhered to these theories and had air superiority were able to sustain their force and achieve their operational objective. In North Africa, we saw Rommel fail because he misjudged his "critical distance", lacked host nation

support, and had intermittent air superiority. In Burma, complete air superiority, host nation support and the correct identification of his "critical distance" contributed towards Slim's success. Finally, in Operation OVERLORD, even though complete air supremacy existed, success was achieved only after the supply policy which offered too much resistance to the operation was overruled.

The historical examples also provide an insight into the impact of the sustainment functions on the culminating point within an immature theater of operations. In the three cases cited, operations were either successful or culminated prior to achieving the desired end state because of the performance of those operations inherent with the arming, fueling, and transporting functions. Though manning, fixing, and protecting certainly were necessary for the operation, none could be singled out as being key to the success or failure.

The likelihood exists for the U.S. to be militarily involved in an immature theater similar to the ones of World War II. Using the USCENTCOM area of operations as an example, one can conclude that many of our potential enemies could field sizeable military forces equipped with the latest weaponry and munitions.

Any military response to protect our national interests in immature theaters would be termed a contingency operation. Doctrinally, we recognize the need for quick

response and a mobile force to rapidly resolve the conflict. The key sustaining function limiting our ability to achieve these conditions in a mid- to high-intensity conflict is transporting. Without an established base, the competition for lift among initial entry forces, follow-on forces, and the supplies necessary to develop the theater and sustain the force will be tremendous. The operational commander must consider this limitation in both the planning and conduct of the operation.

Additionally, the operational commander must focus on the distribution of supplies associated with the remaining sustainment functions. The arming and fueling functions are projected to account for nearly two-thirds of his transportation requirements by weight. To achieve any meaningful reduction in these categories will require innovation, the use of "smart" munitions, and host nation support.

MG Watts concluded that we should not enter a theater of war unless we are able to distribute ammunition and POL, fix battle damage, provide medical treatment, and replenish personnel losses (63). History has shown if we can accomplish the first requirement, the others are attainable. The key sustainment considerations for the operational commander and his staff must focus on achieving this end.

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